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Revised Annotated List of Parasites from Sea Mammals Caught Off the West Coast of North America

L. MARGOLIS and M. D. DAILEY

SEATTLE, WA
March 1972

National Marine Fisheries Service, Special Scientific Report--Fisheries Series

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March 1972

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Revised Annotated List of Parasites from Sea Mammals Caught Off the West Coast of North America

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ABSTRACT

Parasite-host and host-parasite lists, with supporting references, of the ecto- and endoparasites recorded from marine mammals of the North American west coast are provided. Excluding records in which the parasites have not been identified to the species level, there are known 15 trematodes, 3 cestodes, 10 nematodes, 7 acanthocephalans, 1 copepod, and 10 amphipods from 22 species of Cetacea; 8 trematodes, 10 cestodes, 12 nematodes, 8 acanthocephalans, 5 anoplurans, and 5 acarines from 8 species of Pinnipedia; and 4 trematodes, 2 cestodes, 1 nematode, 3 acanthocephalans, and 1 acarine from a single species of Carnivora.

Previously unpublished records which are included here are: *Anisakis simplex* from *Phocoenoides dalli* and *Orcinus orca,* British Columbia; *Cyamus balaenopterae* from *Balaenoptera musculus,* California; *Cyamus erraticus* from *Balaena glacialis,* Alaska; *Cyamus scammoni* from *Eschrichtius gibbosus,* Alaska; *Antarctophthirus trichechi* from *Odobenus rosmarus,* Alaska.

INTRODUCTION

In 1954, Margolis (1954a) published a list of parasites reported from marine mammals caught in waters off western North America (Bering Strait to Mexico). This list was compiled from the literature up to July 15, 1953. During the 17 years since the preparation of the first list there has been a marked increase in the interest in marine mammals, both as objects of research and for display purposes. The numbers of animals necropsied and parasites recovered has grown rapidly. It was considered worthwhile to bring this list up to date in order to facilitate future work in this area as well as furnish a current list of parasites to nonparasitologists working with marine mammals.

The revised list is restricted to organisms generally considered to be true parasites. Excluded are the nematode *Odontobius ceti* Roussel de Vauzème, 1834 and the copepod *Balaenophilus unisetus* Aurivillius, 1879, which live on the baleen plates of whales and are best described as commensals; the barnacles, which have a phoretic relationship with whales; and the lamprey, which is often regarded as a predator rather than a temporary parasite.

As in the original list, we have included parasites reported from Steller and California sea

lions which have died in zoological parks or marine aquaria in New York; Maryland; Washington, D.C.; Louisiana; California; Switzerland; and Germany; as evidence indicates that in most cases the sea lions were definitely captured in western North American waters and were infected prior to capture. Information obtained since publication of the first list has led us to exclude *Anisakis tridentatus* Kreis, 1938 from the present list. This species was described by Kreis (1938) from material collected from the stomach and lungs of a "*Eumetopias jubata* Schreb." that had died in 1935 in the Zoological Gardens, Bäsel, Switzerland. According to Dr. Hans A. Kreis (personal commnication to L. Margolis, January 17, 1955), the host was probably *Zalophus californianus* rather than *E. jubatus* and was born in the Bäsel Zoological Gardens, living there until its death; its parents were imported from California. Clearly, since infection of the definitive host with anisakid nematodes is via ingestion of intermediate hosts, the sea lion must have become infected in the Bäsel Zoo through its food, rather than directly from its parents. Therefore, *A. tridentatus* cannot be considered as a parasite that occurs on the west coast of North America.

Tadros (1966) reported the nematode *Spirocerca lupi* (Rudolphi, 1809) from tumours in the aorta of a *Z. californianus* which had died in the Giza Zoo, Cairo, UAR. No information was provided on the history of this animal which would allow any speculation regarding the origin of the infection; consequently this record is not included in the list.

The present list has been compiled from the literature up to December 31, 1970. Records of parasites that have not been identified at least to the generic level are not included, except for microfilariae in the blood. Several errors in the 1954 list are corrected here. A few previously unpublished records from the files of the first author are also included.

For nomenclature of hosts we have followed Rice and Scheffer (1968). In listing synonyms of parasites we give only those names used in the literature dealing with the parasites of marine mammals from the North American west coast.

PARASITE-HOST LIST

Trematoda

Braunina cordiformis Wolf, 1903
Host: *Tursiops truncatus* - bottle-nosed dolphin.
Locality: California.
Recorded by: Johnston and Ridgway (1969).

Campula oblonga Cobbold, 1858
Host: *Phocoena phocoena* - harbour porpoise.
Location: Liver.
Locality: Washington.
Recorded by: Ching and Robinson (1959).

Cryptocotyle jejuna (Nicoll, 1907) Ransom, 1920
Host: *Callorhinus ursinus* - northern fur seal.
Location: Intestine.
Locality: Alaska.
Recorded by: Neiland (1961); Keyes (1965).

Hadwenius nipponicus Yamaguti, 1951
Host: *Phocoena phocoena* - harbour porpoise.
Location: Stomach (fourth chamber).
Locality: Washington.
Recorded by: Ching and Robinson (1959).

Hadwenius seymouri Price, 1932
Syn.: *Odhneriella seymouri* (Price, 1932) Skrjabin and Schulz, 1935.
Host: *Delphinapterus leucas* - white whale.
Location: Intestine.
Locality: Alaska.
Recorded by: Price (1932).
Remarks: Skrjabin (1944) considered *Hadwenius* to be a synonym of *Odhneriella*, but Yamaguti (1951) retained it as a valid genus and described a second species.

Lecithodesmus sp.
Hosts: *Balaenoptera borealis* - sei whale; *Megaptera novaeangliae* - humpback whale.
Location: Bile ducts.
Locality: California.
Recorded by: Rice (1963).

Lecithodesmus goliath (van Beneden, 1858) Odhner, 1905
Host: *Balaenoptera physalus* - fin whale.
Location: Bile ducts.
Locality: British Columbia.
Recorded by: Margolis and Pike (1955).

Lecithodesmus spinosus Margolis and Pike, 1955
Host: *Balaenoptera borealis* - sei whale.
Location: Bile ducts.
Locality: British Columbia.
Recorded by: Margolis and Pike (1955).

Microphallus pirum (Afanas'ev, 1941) Rausch, 1953
Syn.: *Microphallus enhydrae* Rausch and Locker, 1951.
Host: *Enhydra lutris* - sea otter.
Location: Intestine.
Locality: Alaska.
Recorded by: Rausch and Locker (1951); Rausch (1953); Schiller (1954, 1959); Kenyon (1969).

Nasitrema attenuata Neiland, Rice and Holden, 1970
Host: *Pseudorca crassidens* - false killer whale.
Location: Air sinuses.
Locality: Mexico.
Recorded by: Neiland et al. (1970).

Nasitrema delphini Neiland, Rice and Holden, 1970
Host: *Delphinus delphis* - common dolphin.
Location: Air sinuses.
Locality: California.
Recorded by: Neiland et al. (1970).

Nasitrema globicephalae Neiland, Rice and Holden, 1970
Hosts: *Globicephala macrorhyncha* - short-finned pilot whale; *Lagenorhynchus obliquidens* - Pacific white-sided dolphin; *Lissodelphis borealis* - northern right-whale dolphin; *Pseudorca crassidens* - false killer whale.
Location: Air sinuses.
Locality: California.
Recorded by: Neiland et al. (1970).

Nasitrema lanceolata Neiland, Rice and Holden, 1970
Host: *Globicephala macrorhyncha* - short-finned pilot whale.
Location: Air sinuses.
Locality: California.
Recorded by: Neiland et al. (1970).

Nasitrema stenosoma Neiland, Rice and Holden, 1970
Host: *Stenella dubia* - spotted dolphin.
Location: Air sinuses.
Locality: Mexico.
Recorded by: Neiland et al. (1970).

Ogmogaster antarcticus Johnston, 1931
Hosts: *Balaenoptera physalus* - fin whale; *Eschrichtius gibbosus* - gray whale.
Locations: Intestine and rectum.
Localities: British Columbia; California.
Recorded by: Rausch and Fay (1966); Rausch and Rice (1970).
Remarks: Rausch and Fay (1966) separated *Ogmogaster plicatus* of Margolis and Pike (1955), from the fin whale, into *O. plicatus* and *O. antarcticus*.

Ogmogaster pentalineatus Rausch and Fay, 1966
Host: *Eschrichtius gibbosus* - gray whale.
Locations: Intestine and rectum.
Localities: Alaska; California.
Recorded by: Rausch and Fay (1966); Rausch and Rice (1970).

Ogmogaster plicatus (Creplin, 1829) Jägerskiöld, 1891
Hosts: *Balaenoptera borealis* - sei whale; *Balaenoptera physalus* - fin whale.
Locations: Intestine and rectum.
Localities: British Columbia; California.
Recorded by: Margolis and Pike (1955); Rausch and Fay (1966); Rausch and Rice (1970).

Ogmogaster trilineatus Rausch and Rice, 1970
Host: *Balaenoptera physalus* - fin whale.
Location: Rectum.
Locality: California.
Recorded by: Rausch and Rice (1970).

Orthosplanchnus arcticus Odhner, 1905
Host: *Erignathus barbatus* - bearded seal.
Locations: Gall bladder, bile ducts, pancreatic ducts.
Locality: Alaska.
Recorded by: Johnson et al. (1966).

Orthosplanchnus fraterculus Odhner, 1905
Hosts: *Enhydra lutris* - sea otter; *Erignathus barbatus* - bearded seal.
Locations: Gall bladder, bile ducts, pancreatic ducts.
Locality: Alaska.
Recorded by: Rausch and Locker (1951); Rausch (1953); Kenyon (1969).

Phocitrema fusiforme Goto and Ozaki, 1930
Hosts: *Callorhinus ursinus* - northern fur seal; *Enhydra lutris* - sea otter; *Phoca vitulina richardi* - harbour seal.
Location: Intestine.
Locality: Alaska.
Recorded by: Rausch and Locker (1951); Rausch (1953); Neiland (1961); Keyes (1965).

Pricetrema zalophi (Price, 1932) Ciurea, 1933
Syn.: *Apophallus zalophi* Price, 1932.
Hosts: *Callorhinus ursinus* - northern fur seal; *Enhydra lutris* - sea otter; *Eumetopias jubatus* - Steller sea lion; *Zalophus californianus* - California sea lion.
Location: Intestine.
Localities: Alaska; California; Washington, D.C. (zoo).
Recorded by: Price (1932); Rausch and Locker (1951); Rausch (1953); Neiland (1961); Keyes (1965); Dailey and Hill (1970).
Remarks: Ciurea (1933) created a new genus, *Pricetrema*, for *Apophallus zalophi* Price, 1932, described from the California sea lion.

Stephanoprora denticulata (Rudolphi, 1802) Odhner, 1910
Host: *Zalophus californianus* - California sea lion.
Location: Intestine.
Locality: Washington, D.C. (zoo).
Recorded by: Price (1932).

Stictodora ubelakeri Dailey, 1969
Host: *Zalophus californianus* - California sea lion.
Location: Intestine.
Locality: California.
Recorded by: Dailey (1969); Dailey and Hill (1970).

Zalophotrema hepaticum Stunkard and Alvey, 1929
Host: *Zalophus californianus* - California sea lion.
Location: Liver.
Localities: California and Baja California (wild and captive animals); New York Aquarium; Washington, D.C. (zoo); Baltimore Zoo.
Recorded by: Stunkard and Alvey (1929, 1930); Price (1932); Schroeder and Wegeforth (1935); Fleischman and Squire (1970).
Remarks: Of several species of pinnipeds examined from Baja California and from the San Diego, Calif., Zoo, Schroeder and Wegeforth (1935) did not specify in which they found *Zalophotrema hepaticum*.

Cestoda

Abothrium gadi van Beneden, 1871
Host: *Eumetopias jubatus* - Steller sea lion.
Location: Intestine.
Locality: British Columbia.
Recorded by: Margolis (1956).
Remarks: This is a typical parasite of marine fishes of the family Gadidae. It must be regarded as a pseudoparasite of the sea lion, its presence in this mammal indicating recent ingestion of a gadid.

Diphyllobothrium spp.
Hosts: *Balaenoptera borealis* - sei whale; *Erignathus barbatus* - bearded seal.
Location: Intestine.
Localities: Alaska; California.
Recorded by: Kenyon (1962); Rice (1963).

Diphyllobothrium alascense Rausch and Williamson, 1958
Host: *Phoca vitulina richardi* - harbour seal.
Location: Intestine.

Locality: Alaska.
Recorded by: Rausch and Hilliard (1970).

Diphyllobothrium cordatum (Leuckart, 1863) Gedoelst, 1911
Host: *Erignathus barbatus* - bearded seal.
Location: Intestine.
Locality: Alaska.
Recorded by: Hilliard (1960).

Diphyllobothrium lanceolatum (Krabbe, 1865) Cooper, 1921
Hosts: *Erignathus barbatus* - bearded seal; *Phoca vitulina richardi* - harbour seal.
Location: Intestine.
Locality: Alaska.
Recorded by: Stunkard and Schoenborn (1936); Stunkard (1948); Hilliard (1960); Rausch and Hilliard (1970).
Remarks: Wardle, McLeod, and Stewart (1947) regarded this species as identical with *D. phocarum* (Fabricius, 1780) and placed it in their new genus *Cordicephalus*. Stunkard (1948) considered *Cordicephalus* to be a direct synonym of *Pyramicocephalus*. Markowski (1952) agreed with Stunkard and Schoenborn (1936) in identifying this species from the bearded seal as *D. lanceolatum*. He replaced *phocarum*, a species quite distinct from *lanceolatum*, in the genus *Pyramicocephalus*.

Diphyllobothrium osmeri (von Linstow, 1878) Kuhlow, 1953
Host: *Phoca vitulina richardi* - harbour seal.
Location: Intestine.
Locality: Alaska.
Recorded by: Neiland (1962).

Diphyllobothrium pacificum (Nybelin, 1931) Margolis, 1956
Syns.: *Bothriocephalus* sp. Stiles and Hassall, 1899.
Adenocephalus septentrionalis Nybelin, 1931.
Cordicephalus arctocephalinus (Johnston, 1937) Wardle, McLeod, and Stewart, 1947, in part.
"Species No. 2" of Stunkard, 1948.
Diphyllobothrium glaciale (Cholodkovsky, 1915) Markowski, 1952.
Diphyllobothrium krotovi Delyamure, 1955.
Hosts: *Callorhinus ursinus* - northern fur seal; *Eumetopias jubatus* - Steller sea lion; *Zalophus californianus* - California sea lion.
Location: Intestine.
Localities: Alaska; British Columbia; California.
Recorded by: Stiles and Hassall (1899); Nybelin (1931); Wardle, McLeod, and Stewart (1947); Stunkard (1948); Markowski (1952); Margolis (1956); Keyes (1965); Dailey and Hill (1970).
Remarks: For a review of the history and synonymy of this species see Margolis (1954a, 1956) and Baer et al. (1967).

Diphyllobothrium schistochilus (Germanos, 1895) Meggitt, 1924
Host: *Erignathus barbatus* - bearded seal.
Location: Intestine.
Locality: Alaska.
Recorded by: Johnson et al. (1966).

Diplogonoporus sp.
Host: *Callorhinus ursinus* - northern fur seal.
Location: Intestine.
Locality: Alaska.
Recorded by: Keyes (1965).

Diplogonoporus balaenopterae Lönnberg, 1892
Host: *Megaptera novaeangliae* - humpback whale; unidentified whale.
Location: Intestine.
Localities: Washington; California.
Recorded by: Rice (1963); Rausch (1964).

Diplogonoporus fasciatus (Krabbe, 1865) Lühe, 1899
Syn.: *Diplogonoporus* sp. Stunkard, 1948.
Host: *Eumetopias jubatus* - Steller sea lion.
Location: Intestine.
Locality: Alaska.
Recorded by: Stunkard (1948).
Remarks: Stunkard (1948) believed his *Diplogonoporus* sp. was possibly conspecific with *D. fasciatus* (Krabbe, 1865), but different from the *Diplogonoporus* sp. from the

Diplogonoporus fasciatus—Cont.
northern fur seal. Markowski (1952) considered Stunkard's material as *D. fasciatus*.

Diplogonoporus tetrapterus (von Seibold, 1848) Ariola, 1896
Syn.: *Diplogonoporus* sp. Stunkard, 1948.
Hosts: *Callorhinus ursinus* - northern fur seal; *Enhydra lutris* - sea otter; *Eumetopias jubatus* - Steller sea lion.
Location: Intestine.
Localities: Alaska; British Columbia.
Recorded by: Stunkard (1948); Margolis (1956); Rausch (1964); Kenyon (1969).
Remarks: *Diplogonoporus* sp. of Stunkard (1948) was considered as *D. tetrapterus* by Markowski (1952), with *D. variabilis* as a synonym.

Phyllobothrium delphini (Bosc, 1802)
Hosts: *Balaenoptera physalus* - fin whale; *Berardius bairdi* - North Pacific giant bottlenose whale; *Delphinus delphis* - common dolphin; *Lagenorhynchus obliquidens* - Pacific white-sided dolphin; *Physeter catodon* - sperm whale.
Location: Blubber.
Localities: British Columbia; California.
Recorded by: Margolis and Pike (1955); Rice (1963); Ridgway and Johnston (1965); Johnston and Ridgway (1969).
Remarks: A review of the literature on this cestode, which has an involved history, can be found in Delyamure (1955), Dollfus (1964), and Williams (1968).

Pyramicocephalus phocarum (Fabricius, 1780) Monticelli, 1890
Hosts: *Enhydra lutris* - sea otter; *Erignathus barbatus* - bearded seal; *Phoca* sp.; *Phocoena phocoena* - harbour porpoise.
Location: Intestine.
Locality: Alaska.
Recorded by: Rausch (1953); Hilliard (1960); Kenyon (1962); Johnson et al. (1966); Rausch and Hilliard (1970).
Remarks: Adult worms have been found only in the intestines of sea otter and the bearded seal. Plerocercoids have been found free in the stomach of *Phoca* sp. and the harbour porpoise.

Tetrabothrius sp.
Hosts: *Balaenoptera borealis* - sei whale; *Eschrichtius gibbosus* - gray whale.
Location: Intestine.
Locality: California.
Recorded by: Rice (1963).

Nematoda

Anisakis sp.
Hosts: *Balaenoptera borealis* - sei whale; *Balaenoptera physalus* - fin whale; *Berardius bairdi* - North Pacific giant bottle-nose whale; *Megaptera novaeangliae* - humpback whale; *Orcinus orca* - killer whale; *Physeter catodon* - sperm whale; *Ziphius cavirostris* - goose-beaked whale.
Location: Stomach.
Localities: Alaska; British Columbia; Washington; California.
Recorded by: Scheffer and Slipp (1948); Margolis and Pike (1955); Kenyon (1961); Rice (1963).

Anisakis physeteris Baylis, 1923
Host: *Physeter catodon* - sperm whale.
Locations: Stomach and intestine.
Localities: Alaska; British Columbia.
Recorded by: Scheffer (1939); Margolis and Pike (1955).

Anisakis similis (Baird, 1853) Baylis, 1920
Hosts: *Eumetopias jubatus* - Steller sea lion; *Mirounga angustirostris* - northern elephant seal; *Zalophus californianus* - California sea lion.
Location: Stomach.
Localities: California (San Diego Zoo); Baja California; Switzerland (Bäsel Zoo).
Recorded by: Schroeder and Wegeforth (1935); Caballero and Peregrina (1938); Kreis (1940); Herman (1942).
Remarks: Schroeder and Wegeforth (1935) reported stomach nematodes from the California sea lion, northern elephant seal, harbour seal, and "Galapagos fur seal" (*Arctocephalus australis galapagoensis*) from Baja California and the San Diego Zoo as *Anisakis similis* and *Contracaecum osculatum*, but

with one exception they did not indicate in which pinniped(s) each of the nematode species was found. Their Figure 2 bears the caption "Ulcer crater, California sea lion, male, adult, imbedded with *Anisikis* [sic] *similis* ad." Kreis' (1940) specimens of *A. similis* from the Bäsel Zoological Gardens were obtained from "*Otaria jubata* Desm." Although it is not certain, we are considering this host to be *Eumetopias jubatus*.

Anisakis simplex (Rudolphi, 1809) Baylis, 1920
Hosts: *Balaenoptera borealis* - sei whale; *Berardius bairdi* - North Pacific giant bottlenose whale; *Orcinus orca* - killer whale; *Phocoenoides dalli* - Dall porpoise; *Physeter catodon* - sperm whale.
Location: Stomach.
Locality: British Columbia.
Recorded by: Mueller (1927a, b); Cornwall (1928); Margolis and Pike (1955).
Remarks: The records from *Phocoenoides dalli* and *Orcinus orca* are reported here for the first time.

Anisakis typica (Diesing, 1860) Baylis, 1920
Syns.: *Ascaris typica* Diesing, 1860.
Ascaris simplex of Leidy, 1886.
Host: Unidentified dolphin (*?Delphinus* sp.).
Location: Stomach.
Locality: Unspecified region of the Pacific.
Recorded by: Leidy (1886).
Remarks: This record is included here with reservations because it is not known if the host was captured in waters off North America. Stiles and Hassall (1899) re-examined Leidy's specimens and identified them as *Ascaris typica*. Lyster (1940) and Margolis and Pike (1955) regarded *Anisakis typica* (Diesing, 1860) as a synonym of *Anisakis simplex* (Rudolphi, 1809), but recent studies (Kagei, Oshima, and Takemura, 1967; Kagei, 1969) support the view that they are distinct species.

Contracaecum sp.
Host: *Lagenorhynchus obliquidens* - Pacific white-sided dolphin.
Location: Brain.
Locality: California.
Recorded by: Martin et al. (1970).

Contracaecum sp. (larva)
Host: *Pusa hispida* - ringed seal.
Location: Stomach.
Locality: Alaska.
Recorded by: Johnson et al. (1966).

Contracaecum osculatum (Rudolphi, 1802) Baylis, 1920
Syn.: *Ascaris osculata* Rudolphi, 1802.
Hosts: *Callorhinus ursinus* - northern fur seal; *Eumetopias jubatus* - Steller sea lion; *Mirounga angustirostris* - northern elephant seal; *Phoca vitulina richardi* - harbour seal; *Zalophus californianus* - California sea lion.
Location: Stomach and intestine, abnormally in brain.
Localities: Alaska; British Columbia; California; Baja California; Baltimore Zoo.
Recorded by: Stiles and Hassall (1899); Schroeder and Wegeforth (1935); Caballero and Peregrina (1938); Herman (1942); Fisher (1952); Margolis (1956); Flores-Barroeta et al. (1961); Keyes (1965); Johnson et al. (1966); Johnston and Ridgway (1969); Dailey and Hill (1970); Fleischman and Squire (1970).
Remarks: See *Anisakis similis* for comments on Schroeder and Wegeforth's (1935) records.

Crassicauda sp.
Hosts: *Balaenoptera borealis* - sei whale; *Balaenoptera physalus* - fin whale; *Megaptera novaeangliae* - humpback whale.
Location: Kidneys.
Locality: California.
Recorded by: Rice (1963).

Crassicauda pacifica Margolis and Pike, 1955
Host: *Balaenoptera physalus* - fin whale.
Location: Kidneys.
Locality: British Columbia.
Recorded by: Margolis and Pike (1955).

Dipetalonema odendhali Perry, 1967
Host: *Zalophus californianus* - California sea lion.
Locations: Muscle fascia, thoracic and abdominal cavities.
Locality: California (wild and captive sea lions).
Recorded by: Perry (1967); Dailey and Hill (1970).

Dipetalonema odendhali—Cont.

Remarks: Perry (1967) noted that Anderson's (1959) specimens from the testicular sheath, subcutaneous tissue, and upper colon of northern fur seals from Alaska, which the latter author doubtfully referred to *Dipetalonema spirocauda*, may belong to *D. odendhali*.

Dipetalonema spirocauda (Leidy, 1858) Anderson, 1959

Hosts: (?) *Callorhinus ursinus* - northern fur seal; *Phoca vitulina richardi* - harbour seal.

Location: Heart.

Localities: (?) Alaska; California (captive harbour seals).

Recorded by: Anderson (1959); Taylor et al. (1961); Keyes (1965).

Remarks: Like Anderson's (1959) specimens from the northern fur seal from Alaska (see *Dipetalonema odendhali*), the specimens reported by Keyes (1965) from subcutaneous tissues of the same host species from the same locality may be *D. odendhali*. *D. spirocauda* and *D. odendhali* apparently differ in their sites of infection, the former being found in the heart and main arteries and the latter mainly in connective tissues (see Perry, 1967). For synonymy and a review of the taxonomy of *D. spirocauda*, see Anderson (1959).

Dirofilaria immitis (Leidy, 1856) Ralliet and Henry, 1911

Syns.: *Dirofilaria spirocauda* (Leidy, 1858) *sub judice* Faust, 1937.
Dirofilaria fausti Skrjabin and Shikhobalova, 1948.

Host: *Zalophus californianus* - California sea lion.

Location: Heart.

Locality: Zoological Garden, New Orleans, La. (animal captured at Sea Cliffs, Calif.).

Recorded by: Faust (1937).

Remarks: Faust (1937) did not definitely decide on the specific identity of his specimens. He recognized that they were morphologically indistinguishable from the type material of *Dirofilaria immitis*; however, he associated them provisionally with *Filaria spirocauda* Leidy, 1958 (the types of which were not available for restudy) under the name *Dirofilaria spirocauda* (*sub judice*). Skrjabin and Shikhobalova (1948) named a new species, *D. fausti*, for Faust's material. Faust's specimens are now accepted as *D. immitis*, and *Filaria spirocauda* is regarded as a distinct species, *Dipetalonema spirocauda* (see Anderson, 1959). Perry (1967) expressed doubt that *D. immitis* occurs enzootically in California sea lions and implied that the sea lion examined by Faust could have acquired its infection in New Orleans, where *D. immitis* is enzootic.

Dujardinia sp.

Host: *Zalophus californianus* - California sea lion.

Location: Stomach.

Locality: California (San Diego Zoo).

Recorded by: Herman (1942).

Halocercus invaginatus (Queckitt, 1841) Dougherty, 1943

Host: *Phocoena phocoena* - harbour porpoise.

Location: Lungs.

Localities: Washington; California.

Recorded by: Dougherty (1943a, 1944); Scheffer and Slipp (1948).

Halocercus kirbyi Dougherty, 1944

Syn.: *Halocercus* sp. of Benson and Groody, 1942 and of Dougherty, 1943.

Host: *Phocoenoides dalli* - Dall porpoise.

Location: Lungs.

Locality: California.

Recorded by: Benson and Groody (1942); Dougherty (1943a, 1944).

Parafilaroides sp. Dougherty and Herman, 1947

Host: *Eumetopias jubatus* - Steller sea lion.

Location: Lungs.

Localities: British Columbia; California (wild and captive animals).

Recorded by: Dougherty and Herman (1947); Margolis (1956); Dailey and Hill (1970).

Parafilaroides decorus Dougherty and Herman, 1947

Syns.: *Filaroides* sp. of Dougherty, 1943.
Parafilaroides sp. of Dougherty, 1946.

Host: *Zalophus californianus* - California sea lion.

Location: Lungs.
Locality: California (wild and captive animals); Baltimore Zoo.
Recorded by: Dougherty (1943b, 1946); Dougherty and Herman (1947); Johnston and Ridgway (1969); Dailey (1970); Dailey and Hill (1970); Fleischman and Squire (1970).

Parafilaroides nanus Dougherty and Herman, 1947
Syns.: *Filaroides* sp. of Dougherty, 1943.
Parafilaroides sp. of Dougherty, 1946.
Host: *Eumetopias jubatus* - Steller sea lion.
Location: Lungs.
Locality: California (San Diego Zoo).
Recorded by: Dougherty (1943b, 1946); Dougherty and Herman (1947).

Parafilaroides prolificus Dougherty and Herman, 1947
Syns.: *Filaroides* sp. of Dougherty, 1943.
Parafilaroides sp. of Dougherty, 1946.
Host: *Eumetopias jubatus* - Steller sea lion.
Location: Lungs.
Locality: California (San Diego Zoo).
Recorded by: Dougherty (1943b, 1946); Dougherty and Herman (1947).

Pharurus convolutus (Kühn, 1829) Dougherty, 1943
Host: *Phocoena phocoena* - harbour porpoise.
Location: Lungs.
Localities: Washington; California.
Recorded by: Dougherty (1943a); Scheffer and Slipp (1948).
Remarks: Soviet authors (see Skrjabin et al., 1952; Delyamure, 1955) do not recognize *Pharurus* Leuckart, 1848 as a valid genus. They use the designation *Torynurus convolutus* (Kühn, 1829) Baylis and Daubney, 1925 for this species. Dougherty (1943a) considered *Torynurus* Baylis and Daubney, 1925 as a synonym of *Pharurus*.

Pharurus oserkaiae (Skrjabin, 1942) Dougherty, 1949
Host: *Delphinapterus leucas* - white whale.
Location: Head sinuses.
Locality: Alaska.
Recorded by: Babero and Thomas (1960).
Remarks: Dougherty (1949) considered *Otophocaenurus* Skrjabin, 1942 to be a synonym of *Pharurus* Leukart, 1848, and transferred *O. oserskoi* Skrjabin, 1942 to the latter genus. This view was upheld by Babero and Thomas (1960) but not by Soviet authors (see Skrjabin et al., 1952; Delyamure, 1955). The specific name was modified by Dougherty (1949) from *oserskoi* to *oserskaiaae* and subsequently emended (Dougherty, 1951) to *oserskaiae*. Babero and Thomas (1960) spelled the specific name *oserkaiae*.

Placentonema sp.
Host: *Phocoenoides dalli* - Dall porpoise.
Location: Mammary glands.
Locality: California.
Recorded by: Ridgway (1966); Johnston and Ridgway (1969).

Placentonema gigantissima Gubanov, 1951
Host: *Physeter catodon* - sperm whale.
Location: Placenta.
Locality: California.
Recorded by: Rice (1963).

Porrocaecum sp.
Host: *Zalophus californianus* - California sea lion.
Location: Stomach.
Locality: California (San Diego Zoo).
Recorded by: Herman (1942).
Remarks: This species is undoubtedly a *Terranova*, likely *T. decipiens*.

Stenurus minor (Kühn, 1829) Baylis and Daubney, 1925
Syns.: *Stenurus phocoenae* Dougherty, 1943.
Stenurus vagans (Eschricht, 1841) Dougherty, 1943.
Hosts: *Phocoena phocoena* - harbour porpoise; *Phocoenoides dalli* - Dall porpoise.
Locations: Lungs and head sinuses.
Locality: California.
Recorded by: Dougherty (1943a, c); Johnston and Ridgway (1969).
Remarks: Dougherty (1943a, c) argued that the name *minor* was not available for this nematode and proposed for it first the new name *phocoenae* and later *vagans*. His views seem not to have been generally accepted.

Terranova decipiens (Krabbe, 1878) Mozgovoy, 1951

Syns.: *Ascaris decipiens* Krabbe, 1878.
Porrocaecum decipiens (Krabbe, 1878) Baylis, 1920.
Phocanema decipiens (Krabbe, 1878) Myers, 1959.

Hosts: *Callorhinus ursinus* - northern fur seal; *Enhydra lutris* - sea otter; *Erignathus barbatus* - bearded seal; *Eumetopias jubatus* - Steller sea lion; *Phoca vitulina richardi* - harbour seal; *Pusa hispida* - ringed seal.

Location: Stomach.

Localities: Alaska; British Columbia; Washington.

Recorded by: Stiles and Hassall (1899); Scheffer and Slipp (1944); Scheffer (1945); Fisher (1952); Rausch (1953); Schiller (1954); Margolis (1956); Neiland (1961); Kenyon (1962, 1969); Keyes (1965); Johnson et al. (1966).

Remarks: The nomenclatural combination *Terranova decipiens* apparently was first published by either Mozgovoy (1951) or Skrjabin et al. (1951). According to information received from colleagues in the USSR it is not known which of these two publications was issued first. The corrected proofs of Mozgovoy (1951) and Skrjabin et al. (1951) were returned to the publisher on July 20, 1951, and June 4, 1951 (the "podpisano k pechati" dates shown on these publications), respectively, but it does not follow that the first to be returned was necessarily the first to be published. In view of this uncertainty it would seem just to consider Mozgovoy as the author of the combination *T. decipiens* because apparently he used this name in a thesis written in 1949 and, as a co-author of Skrjabin et al. (1951), he was responsible for the section on Ascaridata in that book. Authors who have been erroneously regarded as the originators of the combination *T. decipiens* are Baylis (1916), Johnston and Mawson (1945), and Mozgovoy (1953) (see Mozgovoy, 1951, 1953; Skrjabin et al., 1951; Margolis, 1956; Myers, 1959).

Trichinella spiralis (Owen, 1835) Railliet, 1895 (larva)

Host: *Odobenus rosmarus* - walrus; *Phoca* sp.

Location: Muscle.

Locality: Alaska.

Recorded by: Rausch et al. (1956); Fay (1960).

Remarks: Rausch et al. (1956) also reported *Trichinella spiralis* larvae from *Erignathus barbatus* and *Delphinapterus leucas* in Arctic Alaska.

Uncinaria sp.

Host: *Zalophus californianus* - California sea lion.

Location: Intestine.

Locality: California.

Recorded by: Dailey and Hill (1970).

Remarks: Dailey and Hill (1970) considered their specimens to be identical with those tentatively identified by Baylis (1933) from a sea lion from the San Francisco Bay area as *Uncinaria hamiltoni* (see below).

Uncinaria hamiltoni Baylis, 1933

Host: (?) *Eumetopias jubatus* - Steller sea lion.

Location: Intestine.

Locality: California.

Recorded by: Baylis (1933, 1947).

Remarks: Baylis doubtfully assigned material obtained "from a sea lion at Palo Alto, San Francisco Bay, California" to *Uncinaria hamiltoni* although the measurements did not agree with the material collected from *Otaria byronia*. Baylis assumed the sea lion was *Eumetopias jubatus* inasmuch as it is the "commoner of the two species of sea lions occurring in the region of San Francisco Bay." Accepting the validity of *Dochmoides* Cameron, 1924 as a replacement for *Uncinaria* Frölich, 1789, Wolfgang (1956) transferred *U. hamiltoni* to *Dochmoides*.

Uncinaria lucasi Stiles, 1901

Syn.: *Uncinaria* sp. of Stiles and Hassall, 1899.

Hosts: *Callorhinus ursinus* - northern fur seal; *Eumetopias jubatus* - Steller sea lion.

Location: Intestine.

Locality: Alaska.
Recorded by: Stiles and Hassall (1899); Stiles (1901); Baylis (1947); Olsen (1958); Olsen and Lyons (1962, 1965); Keyes (1965).

Unidentified microfilariae
Hosts: *Zalophus californianus* - California sea lion; *Eumetopias jubatus* - Steller sea lion.
Location: Blood.
Locality: California (animals in captivity, originally caught off California coast).
Recorded by: Taylor et al. (1961); Perry (1967).

Acanthocephala

Bolbosoma sp.
Hosts: *Balaenoptera borealis* - sei whale; *Balaenoptera musculus* - blue whale; *Megaptera novaeangliae* - humpback whale.
Location: Intestine.
Locality: California.
Recorded by: Rice (1963).

Bolbosoma balaenae (Gmelin, 1790) Meyer, 1932
Host: Unidentified whale.
Location: Intestine.
Locality: Washington.
Recorded by: Van Cleave (1953b).

Bolbosoma turbinella (Diesing, 1851) Porta, 1908
Host: *Balaenoptera borealis* - sei whale.
Location: Intestine.
Locality: British Columbia.
Recorded by: Margolis and Pike (1955).

Corynosoma sp.
Host: *Pusa hispida* - ringed seal.
Location: Intestine.
Locality: Alaska.
Recorded by: Johnson et al. (1966).

Corynosoma alaskensis Golvan, 1959
Host: *Phocoena phocoena* - harbour porpoise.
Location: Intestine.
Locality: Alaska.
Recorded by: Golvan (1959).

Corynosoma enhydri Morosov, 1940
Syns.: *Corynosoma macrosomum* Neiland, 1962.
Corynosoma sp. of Van Cleave, 1953.
Host: *Enhydra lutris* - sea otter.
Location: Intestine.
Locality: Alaska.
Recorded by: Van Cleave (1953b); Neiland (1962); Kenyon (1969).
Remarks: In a mimeographed report by Jellison and Neiland (1965), *Corynosoma macrosomum* is recognized as a synonym of *C. enhydri.*

Corynosoma falcatum Van Cleave, 1953
Host: *Phoca vitulina richardi* - harbour seal.
Location: Intestine.
Locality: Alaska.
Recorded by: Van Cleave (1953a, b).
Remarks: Van Cleave gave the host as *Halichoerus grypus,* the gray seal. Kruidenier (1954) pointed out that this species of seal does not occur in the Pacific and that the host was almost certainly *Phoca vitulina richardi.*

Corynosoma obtuscens Lincicome, 1943
Host: *Zalophus californianus* - California sea lion.
Location: Intestine.
Locality: California (wild and captive animals).
Recorded by: Lincicome (1943); Van Cleave (1953a, b); Dailey and Hill (1970).

Corynosoma semerme (Forssell, 1904) Lühe, 1911
Hosts: *Callorhinus ursinus* - northern fur seal; *Delphinapterus leucas* - white whale; *Phoca vitulina richardi* - harbour seal; unidentified seals.
Location: Intestine.
Locality: Alaska.
Recorded by: Van Cleave (1953b); Neiland (1962).
Remarks: Fisher's (1952) report of this species from the harbour seal in British Columbia proved to be erroneous; his specimens were redetermined as *Corynosoma strumosum* (see Margolis, 1956).

Corynosoma similis Neiland, 1962
Hosts: *Callorhinus ursinus* - northern fur seal; *Delphinapterus leucas* - white whale.
Location: Intestine.
Locality: Alaska.
Recorded by: Neiland (1962).

Corynosoma strumosum (Rudolphi, 1802) Lühe, 1904
Syn.: *Corynosoma osmeri* Fujita, 1921.
Hosts: *Callorhinus ursinus* - northern fur seal; *Delphinapterus leucas* - white whale; *Enhydra lutris* - sea otter; *Eumetopias jubatus* - Steller sea lion; *Phoca vitulina richardi* - harbour seal; *Phoca* sp.; *Zalophus californianus* - California sea lion; unidentified seals.
Location: Intestine.
Localities: Alaska; British Columbia; Washington; California.
Recorded by: Ball (1930); Lincicome (1943); Scheffer and Slipp (1944); Van Cleave (1953a, b); Rausch (1953); Margolis (1956); Neiland (1961, 1962); Keyes (1965); Kenyon (1969); Dailey and Hill (1970).
Remarks: Van Cleave (1953a, b) considered *Corynosoma osmeri* Fujita, 1921, recorded by Lincicome (1943) from the California sea lion, as a synonym of *C. strumosum*. *Halichoerus grypus* was erroneously included by Van Cleave (1953b) as a host of *C. strumosum* in Alaska; according to Kruidenier (1954) this host was almost certainly *Phoca vitulina richardi*.

Corynosoma validum Van Cleave, 1953
Hosts: *Erignathus barbatus* - bearded seal; *Odobenus rosmarus* - walrus; *Phoca* sp.; unidentified seal.
Location: Intestine.
Locality: Alaska.
Recorded by: Van Cleave (1953a, b); Kenyon (1962).

Corynosoma villosum Van Cleave, 1953
Syn.: *Corynosoma* sp. of Rausch and Locker, 1951 and Rausch, 1953.
Hosts: *Callorhinus ursinus* - northern fur seal; *Enhydra lutris* - sea otter; *Eumetopias jubatus* - Steller sea lion; unidentified seal.
Location: Intestine.
Localities: Alaska; British Columbia.
Recorded by: Rausch and Locker (1951); Rausch (1953); Van Cleave (1953a, b); Schiller (1954); Margolis (1956); Golvan (1959).

Corynosoma wegeneri Heinze, 1934
Syn.: *Corynosoma hadweni* Van Cleave, 1953.
Hosts: *Delphinapterus leucas* - white whale; *Phoca vitulina richardi* - harbour seal; *Phoca* sp.; *Pusa hispida* - ringed seal; unidentified seals.
Location: Intestine.
Locality: Alaska.
Recorded by: Van Cleave (1953a, b); Neiland (1962).
Remarks: Margolis (1955b) considered *Corynosoma hadweni* to be a synonym of *C. wegeneri*. *Halichoerus grypus* was erroneously included by Van Cleave (1953a, b) as a host of *C. hadweni* in Alaska; according to Kruidenier (1954) this host was almost certainly *Phoca vitulina richardi*.

Copepoda

Pennella balaenopterae Koren and Danielssen, 1877
Hosts: *Balaenoptera borealis* - sei whale; *Balaenoptera physalus* - fin whale.
Location: Head embedded in blubber, trunk external.
Localities: British Columbia; California.
Recorded by: Cornwall (1927, 1928, 1955); Rice (1963).

Amphipoda

Cyamus sp.
Host: *Berardius bairdi* - North Pacific giant bottle-nose whale.
Location: Skin.
Localities: British Columbia; California.
Recorded by: Rice (1963); Leung (1965).

Cyamus balaenopterae Barnard, 1932
Hosts: *Balaenoptera acutorostrata* - minke whale; *Balaenoptera musculus* - blue whale; *Balaenoptera physalus* - fin whale.

Location: Skin.
Localities: Alaska; British Columbia; California.
Recorded by: Margolis (1959); Leung (1965).
Remarks: The record from the blue whale (California) was previously unpublished and is based on a collection obtained for identification from D. W. Rice, National Marine Fisheries Service, Seattle.

Cyamus boopis Lütken, 1870
Syns.: *Cyamus suffusus* Dall, 1872.
Paracyamus boopis (Lütken, 1870) Sars, 1895.
Host: *Megaptera novaeangliae* - humpback whale.
Location: Skin.
Localities: Alaska; British Columbia; California.
Recorded by: Dall (1872a, b); Scammon (1874); Cornwall (1928); Scheffer (1939); Margolis (1954b, 1955a); Rice (1963); Leung (1965).
Remarks: For review of synonymy and taxonomy see Margolis (1954a, b; 1955a).

Cyamus catodontis Margolis, 1954
Host: *Physeter catodon* - sperm whale.
Location: Skin.
Locality: British Columbia.
Recorded by: Margolis (1954b, 1955a); Leung (1965).

Cyamus ceti (Linnaeus, 1758) Lamarck, 1801
Syn.: *Cyamus mysticeti* Lütken, 1870; Dall, 1872.
Hosts: *Balaena mysticetus* - bowhead whale; *Eschrichtius gibbosus* - gray whale.
Location: Skin.
Localities: Alaska; California.
Recorded by: Dall (1872b); Scammon (1874); Rice (1963); Leung (1965).

Cyamus erraticus R. de Vauzème, 1834
Host: *Balaena glacialis* - black right whale.
Location: Skin.
Localities: Alaska; British Columbia.
Recorded by: Margolis (1955a).
Remarks: The Alaskan record is based on specimens received for identification from D. W. Rice, National Marine Fisheries Service, Seattle, and has not been published previously.

Cyamus gracilis R. de Vauzème, 1834
Syn.: *Cyamus gracilis* Dall, 1874.
Host: *Balaena glacialis* - black right whale.
Location: Skin.
Locality: Alaska.
Recorded by: Dall (1874); Leung (1965).
Remarks: Lütken (1887) re-examined Dall's specimens and found them to be identical with *Cyamus gracilis* R. de Vauzème, 1834.

Cyamus kessleri Brandt, 1872
Host: *Eschrichtius gibbosus* - gray whale.
Location: Skin.
Locality: California.
Recorded by: Leung (1965).
Remarks: This whale-louse has been reported from Arctic Alaska (Hurley and Mohr, 1957; Leung, 1965).

Cyamus ovalis R. de Vauzème, 1834
Syn.: *Cyamus tentator* Dall, 1874.
Host: *Balaena glacialis* - black right whale.
Location: Skin.
Locality: Alaska.
Recorded by: Dall (1874).
Remarks: Lütken (1887) re-examined some of Dall's specimens of *C. tentator* and found them to be identical with *C. ovalis*.

Cyamus scammoni Dall, 1872
Host: *Eschrichtius gibbosus* - gray whale.
Location: Skin.
Localities: Alaska; British Columbia; California.
Recorded by: Dall (1872a); Scammon (1874); Lütken (1887); Margolis (1954b, 1955a); Rice (1963); Leung (1965).
Remarks: The Alaskan record was previously unpublished and is based on material collected at St. Lawrence Island in the Bering Sea by Dr. F. H. Fay, Arctic Health Research Laboratory, College, Alaska. Hurley and Mohr (1957) and Leung (1965) reported this species from the Arctic coast of Alaska.

Neocyamus physeteris (Pouchet, 1888) Margolis, 1955
Host: *Physeter catodon* - sperm whale.
Location: Skin.

Neocyamus physeteris—Cont.
Locality: British Columbia.
Recorded by: Margolis (1959); Leung (1965).

Platycyamus sp.
Host: *Berardius bairdi* - North Pacific giant bottle-nose whale.
Location: Skin.
Locality: British Columbia.
Recorded by: Leung (1965).

Syncyamus sp.
Host: *Tursiops truncatus* - bottle-nosed dolphin.
Location: Skin.
Locality: Mexico.
Recorded by: Leung (1967).

Syncyamus sp.
Host: *Stenella longirostris* - long-beaked dolphin.
Location: Skin.
Locality: Mexico.
Recorded by: Leung (1970).

Anoplura

Antarctophthirus callorhini (Osborn, 1899) McAtee, 1923
Syns.: *Haematopinus callorhini* Osborn, 1899.
Antarctophthirus monachus Kellogg and Ferris, 1915.
Host: *Callorhinus ursinus* - northern fur seal.
Location: Skin.
Locality: Alaska.
Recorded by: Osborn (1899); Kellogg and Ferris (1915); McAtee (1923); Ferris (1934, 1951); Jellison (1952); Keyes (1965).

Antarctophthirus microchir (Trouessart and Neumann, 1888) Enderlein, 1906
Hosts: *Eumetopias jubatus* - Steller sea lion; *Phoca vitulina richardi* - harbour seal; *Zalophus californianus* - California sea lion.
Location: Skin.
Localities: Alaska; British Columbia; California (wild and captive animals).
Recorded by: Ferris (1916, 1934, 1951); Doetschman (1944b); Jellison (1952); Margolis (1956); Thorsteinson and Lensink (1962); Dailey and Hill (1970).
Remarks: The only report of this louse from the harbour seal was from captive animals in the San Diego Zoo where Doetschman (1944b) found it on all three hosts listed above.

Antarctophthirus trichechi (Bohemann, 1865) Enderlein, 1909
Host: *Odobenus rosmarus* - walrus.
Location: Skin.
Locality: Alaska.
Remarks: This record is based on information received from the late Prof. G. J. Spencer, University of British Columbia, who identified a collection of lice from walrus taken at St. Lawrence Island in the Bering Sea (personal communication to L. Margolis, February 25, 1955). Weber (1950) previously reported this species from the walrus in Arctic Alaska (Point Barrow).

Echinophthirius horridus (Olfers, 1816) Fahrenholz, 1919
Hosts: *Phoca vitulina richardi* - harbour seal; *Pusa hispida* - ringed seal.
Location: Skin.
Localities: Alaska; British Columbia; California (wild and captive animals).
Recorded by: Ferris (1934, 1951); Margolis (1956); Brown et al. (1960); Taylor et al. (1961).

Proechinophthirus fluctus (Ferris, 1916) Ewing, 1923
Syn.: *Echinophthirius fluctus* Ferris, 1916.
Hosts: *Callorhinus ursinus* - northern fur seal; *Eumetopias jubatus* - Steller sea lion.
Location: Skin.
Localities: Alaska; California (Stanford Museum specimen).
Recorded by: Ferris (1916, 1934, 1951); Ewing (1923); McAtee (1923); Keyes (1965).

Acarina

Halarachne sp.
Hosts: *Eumetopias jubatus* - Steller sea lion; *Phoca vitulina richardi* - harbour seal.

Location: Naso-pharynx.
Localities: British Columbia; California.
Recorded by: Ferris (1942); Fisher (1952); Margolis (1956).

Halarachne halichoeri Allman, 1847
Syn.: *Halarachne otariae* of Ferris, 1925, in part.
Host: *Phoca vitulina richardi* - harbour seal.
Location: Naso-pharynx.
Localities: Washington; California.
Recorded by: Ferris (1925, 1942); Scheffer and Slipp (1944).
Remarks: Ferris (1925) identified specimens from Pacific Grove, Calif., as *Halarachne otariae* Steding, 1923. In 1942 he redetermined these specimens as *H. halichoeri.* Newell (1947) doubted the existence of this species on the Pacific coast of North America and referred the above records of it to *H. mirounga*e.

*Halarachne mirounga*e Ferris, 1925
Hosts: *Enhydra lutris* - sea otter; *Mirounga angustirostris* - northern elephant seal; *Phoca vitulina richardi* - harbour seal.
Location: Naso-pharynx.
Localities: Alaska; California (San Diego Zoo); Baja California.
Recorded by: Ferris (1925, 1942); Doetschman (1941); Newell (1947); Kenyon et al. (1965); Kenyon (1969).

Orthohalarachne attenuata (Banks, 1910) Newell, 1947
Syn.: *Halarachne attenuata* Banks, 1910.
Hosts: *Callorhinus ursinus* - northern fur seal; *Eumetopias jubatus* - Steller sea lion; *Zalophus californianus* - California sea lion.
Location: Naso-pharynx.
Localities: Alaska; Oregon; California.
Recorded by: Banks (1910); Oudemans (1926); Newell (1947); Keyes (1965); Dailey and Hill (1970).

Orthohalarachne diminuata (Doetschman, 1944) Newell, 1947
Syn.: *Halarachne diminuata* Doetschman, 1944.
Hosts: *Callorhinus ursinus* - northern fur seal; *Eumetopias jubatus* - Steller sea lion; *Zalophus californianus* - California sea lion.
Location: Bronchioles and trachea.
Localities: Alaska; British Columbia; California.
Recorded by: Doetschman (1944a); Newell (1947); Margolis (1956); Thorsteinson and Lensink (1962); Keyes (1965); Dailey (1970); Dailey and Hill (1970).
Remarks: Thorsteinson and Lensink (1962) referred to their specimens from *Eumetopias jubatus* as "nose mites." It seems likely, therefore, that they had either *Orthohalarachne attenuata* or *O. zalophi,* which occur in the nasal passages, rather than *O. diminuata,* which occurs deeper in the respiratory system.

Orthohalarachne zalophi (Oudemans, 1916) Newell, 1947
Syns.: *Halarachne zalophi* Oudemans, 1916.
Halarachne otariae Steding, 1923.
Hosts: *Eumetopias jubatus* - Steller sea lion; *Zalophus californianus* - California sea lion.
Location: Naso-pharynx.
Localities: California (wild and captive animals); Germany (Göttingen Zoo).
Recorded by: Oudemans (1916, 1926); Steding (1923); Doetschman (1941); Ferris (1942); Newell (1947).
Remarks: Oudemans (1916) and Steding (1923) described *Halarachne zalophi* and *H. otariae,* respectively, from the same California sea lion in Göttingen. Ferris (1942) and Newell (1947) considered *H. otariae* identical with *H. zalophi,* the latter author transferring the species to *Orthohalarachne.*

HOST-PARASITE LIST

Cetacea

Balaena glacialis - black right whale.
Amphipoda: *Cyamus erraticus, C. gracilis, C. ovalis.*

Balaena mysticetus - northern bowhead whale.
Amphipoda: *Cyamus ceti.*

Balaenoptera acutorostrata - minke whale.
Amphipoda: *Cyamus balaenopterae.*

Balaenoptera borealis - sei whale.
Trematoda: *Lecithodesmus* sp., *L. spinosus, Ogmogaster plicatus.*
Cestoda: *Diphyllobothrium* spp., *Tetrabothrius* sp.
Nematoda: *Anisakis* sp., *A. simplex, Crassicauda* sp.
Acanthocephala: *Bolbosoma* sp., *B. turbinella.*
Copepoda: *Pennella balaenopterae.*

Balaenoptera musculus - blue whale.
Acanthocephala: *Bolbosoma* sp.
Amphipoda: *Cyamus balaenopterae.*

Balaenoptera physalus - fin whale.
Trematoda: *Lecithodesmus goliath, Ogmogaster antarcticus, O. plicatus, O. trilineatus.*
Cestoda: *Phyllobothrium delphini.*
Nematoda: *Anisakis* sp., *Crassicauda* sp., *C. pacifica.*
Copepoda: *Pennella balaenopterae.*
Amphipoda: *Cyamus balaenopterae.*

Berardius bairdi - North Pacific giant bottlenose whale.
Cestoda: *Phyllobothrium delphini.*
Nematoda: *Anisakis* sp., *A. simplex.*
Amphipoda: *Cyamus* sp., *Platycyamus* sp.

Delphinapterus leucas - white whale.
Trematoda: *Hadwenius seymouri.*
Nematoda: *Pharurus oserskaiae.*
Acanthocephala: *Corynosoma semerme, C. similis, C. strumosum, C. wegeneri.*

Delphinus delphis - common dolphin.
Trematoda: *Nasitrema delphini.*
Cestoda: *Phyllobothrium delphini.*

Eschrichtius gibbosus - gray whale.
Trematoda: *Ogmogaster antarcticus, O. pentalineatus.*
Cestoda: *Tetrabothrius* sp.
Amphipoda: *Cyamus ceti, C. kessleri, C. scammoni.*

Globicephala macrorhyncha - short-finned pilot whale.
Trematoda: *Nasitrema globicephalae, N. lanceolata.*

Lagenorhynchus obliquidens - Pacific white-sided dolphin.
Trematoda: *Nasitrema globicephalae.*
Cestoda: *Phyllobothrium delphini.*
Nematoda: *Contracaecum* sp.

Lissodelphis borealis - northern right-whale dolphin.
Trematoda: *Nasitrema globicephalae.*

Megaptera novaeangliae - humpback whale.
Trematoda: *Lecithodesmus* sp.
Cestoda: *Diplogonoporus balaenopterae.*
Nematoda: *Anisakis* sp., *Crassicauda* sp.
Acanthocephala: *Bolbosoma* sp.
Amphipoda: *Cyamus boopis.*

Orcinus orca - killer whale.
Nematoda: *Anisakis* sp., *A. simplex.*

Phocoena phocoena - harbour porpoise.
Trematoda: *Campula oblonga, Hadwenius nipponicus.*
Cestoda: *Pyramicocephalus phocarum* plerocercoids.
Nematoda: *Halocercus invaginatus, Pharurus convolutus, Stenurus minor.*
Acanthocephala: *Corynosoma alaskensis.*

Phocoenoides dalli - Dall porpoise.
Nematoda: *Anisakis simplex, Halocercus kirbyi, Placentonema* sp., *Stenurus minor.*

Physeter catodon - sperm whale.
Cestoda: *Phyllobothrium delphini.*
Nematoda: *Anisakis* sp., *A. physeteris, A. simplex, Placentonema gigantissima.*
Amphipoda: *Cyamus catodontis, Neocyamus physeteris.*

Pseudorca crassidens - false killer whale.
Trematoda: *Nasitrema attenuata, N. globicephalae.*

Stenella dubia - spotted dolphin.
Trematoda: *Nasitrema stenosoma.*

Stenella longirostris - long-beaked dolphin.
Amphipoda: *Syncyamus* sp.

Tursiops truncatus - bottle-nose dolphin.
Trematoda: *Braunina cordiformis.*
Amphipoda: *Syncyamus* sp.

Ziphius cavirostris - goose-beaked whale.
Nematoda: *Anisakis* sp.

Unidentified dolphin.
Nematoda: *Anisakis typica.*

Unidentified whales.
Cestoda: *Diplogonoporus balaenopterae.*
Acanthocephala: *Bolbosoma balanae.*

Pinnipedia

Callorhinus ursinus - northern fur seal.
Trematoda: *Cryptocotyle jejuna, Phocitrema fusiforme, Pricetrema zalophi.*
Cestoda: *Diphyllobothrium pacificum, Diplogonoporus* sp., *D. tetrapterus.*
Nematoda: *Contracaecum osculatum, Dipetalonema* (?) *spirocauda, Terranova decipiens, Uncinaria lucasi.*
Acanthocephala: *Corynosoma semerme, C. similis, C. strumosum, C. villosum.*
Anoplura: *Antarctophthirus callorhini, Proechinophthirus fluctus.*
Acarina: *Orthohalarachne attenuata, O. diminuata.*

Erignathus barbatus - bearded seal.
Trematoda: *Orthosplanchnus arcticus, O. fraterculus.*
Cestoda: *Diphyllobothrium cordatum, D. lanceolatum, D. schistochilus, Pyramicocephalus phocarum.*
Nematoda: *Terranova decipiens.*
Acanthocephala: *Corynosoma validum.*

Eumetopias jubatus - Steller sea lion.
Trematoda: *Pricetrema zalophi.*
Cestoda: *Abothrium gadi, Diphyllobothrium pacificum, Diplogonoporus fasciatus, D. tetrapterus.*
Nematoda: *Anisakis similis, Contracaecum osculatum, Parafilaroides* sp., *P. nanus, P. prolificus, Terranova decipiens, Uncinaria hamiltoni, U. lucasi,* microfilariae.
Acanthocephala: *Corynosoma strumosum, C. villosum.*
Anoplura: *Antarctophthirus microchir, Proechinophthirus fluctus.*
Acarina: *Halarachne* sp., *Orthohalarachne attenuata, O. diminuata, O. zalophi.*

Mirounga angustirostris - northern elephant seal.
Nematoda: *Anisakis similis, Contracaecum osculatum.*
Acarina: *Halarachne mirounga.*

Odobenus rosmarus - walrus.
Nematoda: *Trichinella spiralis* (larva).
Acanthocephala: *Corynosoma validum.*
Anoplura: *Antarctophthirus trichechi.*

Phoca vitulina richardi - harbour seal.
Trematoda: *Phocitrema fusiforme.*
Cestoda: *Diphyllobothrium alascense, D. lanceolatum, D. osmeri.*
Nematoda: *Contracaecum osculatum, Dipetalonema spirocauda, Terranova decipiens.*
Acanthocephala: *Corynosoma falcatum, C. semerme, C. strumosum, C. wegeneri.*
Anoplura: *Antarctophthirus microchir, Echinophthirius horridus.*
Acarina: *Halarachne* sp., *H. halichoeri*(?), *H. mirounga.*

Pusa hispida - ringed seal.
Nematoda: *Contracaecum* sp., *Terranova decipiens.*
Acanthocephala: *Corynosoma* sp., *C. wegeneri.*
Anoplura: *Echinophthirius horridus.*

Zalophus californianus - California sea lion.
Trematoda: *Pricetrema zalophi, Stictodora ubelakeri, Stephanoprora denticulata, Zalophotrema hepaticum.*
Cestoda: *Diphyllobothrium pacificum.*
Nematoda: *Anisakis similis, Contracaecum osculatum, Dipetalonema odendhali, Dirofilaria immitis, Dujardinia* sp., *Parafilaroides decorus, Porrocaecum* sp., *Uncinaria* sp., microfilariae.
Acanthocephala: *Corynosoma obtuscens, C. strumosum.*
Anoplura: *Antarctophthirus microchir.*
Acarina: *Orthohalarachne attenuata, O. diminuata, O. zalophi.*

Unidentified seals.
Cestoda: *Pyramicocephalus phocarum* plerocercoids.
Acanthocephala: *Corynosoma semerme, C. strumosum, C. validum, C. villosum, C. wegeneri.*
Nematoda: *Trichinella spiralis* (larva).

Carnivora

Enhydra lutris - sea otter.
Trematoda: *Orthosplanchnus fraterculus, Microphallus pirum, Phocitrema fusiforme, Pricetrema zalophi.*
Cestoda: *Diplogonoporus tetrapterus, Pyramicocephalus phocarum.*
Nematoda: *Terranova decipiens.*
Acanthocephala: *Corynosoma enhydri, C. strumosum, C. villosum.*
Acarina: *Halarachne miroungae.*

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